LISTING AND AMENDMENT OF THE CLAIMS:

1. – 42. (Canceled)

43. (New) Product for the replacement and augmentation of bone, comprising S-sulfonated keratin treated with reducing agent to remove sulfonate functionality and form disulfide crosslinks and optionally containing up to 60% by weight hydroxyapatite, processed to form a porous material.

44. (New) The product of claim 43 where the porous material has a pore size ranging from 50 to 320 micron.

45. (New) Process for preparing the product of claim 43, comprising the steps of grinding S-sulfonated keratin to a particle size ranging from 125 to 300 microns, admixing the S-sulfonated keratin with water in a weight ratio ranging from 1:0.1 to 1:10 S-sulfonated keratin: water and with soluble porogen in a weight ratio of S-sulfonated keratin: porogen ranging from 1:0.01 to 1:10 and optionally with up to 60% by weight of the S-sulfonated keratin of hydroxyapatite, compressing the admixture, washing compressed admixture to remove porogen, treating with a reducing agent to remove sulfonate group functionality and provide disulfide cross-links, and freeze drying.

46. (New) Product for bone grafting application comprising S-sulfonated keratin and hydroxyapatite in a weight ratio of S-sulfonated keratin to hydroxyapatite ranging from 1:0.1 to 1:2 S-sulfonated keratin to hydroxyapatite, processed to form a porous spongy material, where the S-sulfonated keratin is optionally treated with reducing agent to remove sulfonate functionality and provide disulfide crosslinks.

47. (New) Process for preparing the product of claim 46 comprising the steps of forming an aqueous solution of S-sulfonated keratin, suspending hydroxyapatite in the S-sulfonated keratin solution at a weight ratio of S-sulfonated keratin to hydroxyapatite ranging from 1:0.1 to 1:2 and them freeze drying.

48. (New) The process of claim 47 comprising the additional steps of treating the freeze dried material with reducing agent to remove sulfonate functionality from the S-sulfonated keratin and form disulfide crosslinks, washing to remove reducing agent and freeze drying the washed material.

49. (New) Product for use in bone fixation and immobilization comprising S-sulfonated keratin treated with reducing agent to remove sulfonate functionality and disulfide crosslinks optionally containing up to 60% hydroxyapatite, processed to form a compressed product.

50. (New) Process for preparing the product of claim 49 comprising the steps of grinding S-sulfonated keratin to a particle size ranging from 125 to 200 microns, admixing with water at a weight ratio of 1:0.1 to 1:10 S-sulfonated keratin: water admixing 0 to 60% hydroxyapatite by weight of the S-sulfonated keratin, compressing the admixture to form compressed product, treating the compressed product with reducing agent to remove sulfonate functionality and form disulfide crosslinks, washing to remove reducing agent and drying at ambient temperature.

51. (New) Product for use in bone fixation and immobilization comprising stacked layers of film hot compressed to form a block comprising S-sulfonated keratin treated with reducing agent to remove sulfonate functionality and form disulfide crosslinks and optionally up to 60% hydroxyapatite based on the S-sulfonated keratin.

52. (New) Process for preparing the product of claim 51 comprising forming a film of S-sulfonated keratin and up to 60% by weight hydroxyapatite based on the S-sulfonated keratin, treating the film with reducing agent to remove S-sulfonated functionality and provide disulfide crosslinks, washing to remove reducing agent, drying at ambient temperature, stacking the film in layers and hot compressing the stacked layers to form a block.

53. (New) Process for preparing the product of claim 51 comprising forming a film of S-sulfonated keratin and up to 60% by weight of hydroxyapatite based on the S-sulfonated keratin, stacking the film in layers and hot compressing the stacked layers to form a block, treating the block with reducing agent to remove sulfonate functionality and provide disulfide crosslinks, washing to remove reducing agent and drying at ambient temperature.